Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 21 Number 1 **Fall 2001**

Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th St.
Bloomington, MN 55425-1600
952-854-5900

6:30 p.m. — Building east door opens
6:30 p.m. — Refreshments, information, Room A
7 – 9 p.m. —Program, society business
7:30 p.m. — Building door is locked
9:30 p.m. — Building closes

Programs

The MNPS meets the first Thursday in October, November, December, February, March, April, May and June. Check the web page for additional program information.

Dec. 6
The Art of Botanical Illustration" by Vera Wong.

Feb. 7, Speaker to be announced

March 7, Speaker to be announced

Symposium on wetland restoration to be in March

Wetland restoration will be the subject of the society's annual symposium. It will be in March. Jason Husveth, Nancy Sather and Esther Mclaughlin are organizing this educational opportunity. Watch the MNPS web site for information on the date, location and presenters.

MNPS Web site

http://www.stolaf.edu/depts./biology/mnps

Global warming may be cause of early blooming

Washington, D.C. cherry trees start blooming an average of seven days earlier now than they did in 1970; flowering plants are blooming 4.5 days earlier. Global warming is suspected as the probable cause.

These figures were released by The Smithsonian's National Museum of Natural History in a report on results of a 30-year study of flowering plant species in the Washington metro area. The study, which was conducted by the museum's Department of Botany, showed that the rise in the region's average minimum temperatures is producing earlier flowering in 89 of the 100 common plant species investigated.

Botanical data were collected from 1970 to 2000. Smithsonian scientists Dr. Stanwyn Shetler, Mones Abu-Asab, Paul Peterson and Sylvia Stone Orli examined the data. "This trend of earlier flowering is consistent with what we know about the effects of global warming," Shetler said. "When we compared the records from the Smithsonian study with local, long-term temperature records, we discovered statistically significant correlations. The minimum temperature has been going up over these years, and the early arrival of the cherry blossoms appears to be one of the results."

The two predominant species of Japanese flowering cherries that were planted near the Tidal Basin are the Oriental cherry blossom (*Prunus serrulata*) and the Yoshino cherry blossom (*Prunus yedoensis*). They now reach peak bloom six and seven days earlier than in the 1970s, respectively.

The Yoshino reached peak bloom March 20, 2000, the second earliest date on record. The average date to bloom is April 4. Eleven of the 100 native and naturalized plant species studied showed a reverse trend and are blooming later. The Japanese honeysuckle is blooming an average of 10.4 days later; the Dutchman's-breeches 3.2 days later.

"Over a long period, the species composition of our local flora could change," Shetler said. "Species like the sugar maple that

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Global warming

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require a long cold period may die out in our region. Invasive alien species ... may become more and more of a problem. Weedy species like false- strawberry that can bloom throughout relatively mild winters could spread. ... Persons with allergy problems will experience them earlier."

The study is continuing. Data are maintained at www.nmnh.si.edu/botany/projects/dcflora.

(This information is from an article in the Fall/Winter issue of "Marilandica," the newsletter of the Maryland Native Plant Society.)

Field trip is Nov. 10

Jason Husveth will conduct a winter botany identification field trip/walk at the Minnesota Valley National Wildlife Refuge Saturday, Nov. 10, from 9:30 a.m. to 12:30 p.m. During a walk through the river bottoms and bluffs, Jason will show how to identify native flora of the Minnesota River Valley.

The Minnesota Native Plant Society

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Dues for regular members are $12 per year; students and seniors, $8; families, $15; institutions, $20; donors, $25. All dues include a newsletter subscription. Four issues are published each year. Make checks out to: Minnesota Native Plant Society. Mail them to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Ave., St. Paul, MN 55108.

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The Minnesota Plant Press is the quarterly newsletter of the Minnesota Native Plant Society. Articles are welcomed. Write the editor, Gerry Drewry, at 24090 Northfield Blvd., Hampton, MN 55031; phone her at 651-463-8006; or send an e-mail to: gdrewry@infi.net.

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

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Minnesota Native Plant Society Membership Directory

October, 2001

This directory is for members' use only. The society will not sell the list or give it to libraries or other organizations.

The Big Blowdown in the context of the history and future of the BWCAW forest

by Lee E. Frelich
(Abstract of talk at May 3, 2001 MNPS meeting)

The big blow-down of July 4, 1999, was superimposed on a forested landscape mosaic created by a combination of fire and logging.

In presettlement times (1600-1900), the Boundary Waters Canoe Area Wilderness forest had two major natural disturbance regimes. First were stands of even-aged jack pine forest, sometimes mixed with black spruce and aspen, that originated after major severe crown fires. These fires were similar in intensity to the Yellowstone fires of 1988, with 50- to100-foot flame lengths and sizes from 100,000 to 400,000 acres. Jack pine and black spruce are adapted for massive reproduction after such fires, which occurred with an average interval of 50 years at a given point on the ground. Occasionally, two fires would burn an area within 10 years, and the conifers would not be old enough to bear seeds. In this case, aspen, with its long-distance seed dispersal, would invade after the second fire.

The second disturbance regime consisted of surface fire at 20- to 50-year intervals in white and red pine forests concentrated on islands, peninsulas, and areas with large lakes that broke the flow of major crown fires across the landscape. The surface fires killed few of the big pines and allowed them to reproduce by eliminating competition from shade-tolerant conifers such as fir that invade and replace pines in the absence of fire. A few very small areas virtually never burned, and these little pockets along rocky lakeshores contained the ancient white cedars that can live 1000 years or more.

Between 1890 and 1970, about half of the BWCAW was logged. Virtually all of the logged areas have been reforested with aspen and paper birch. The portion of the forest that was not logged was also affected by humans through the fire exclusion, by fragmenting the flow of fire across the landscape surrounding the wilderness, and direct fire suppression. This allowed fir and spruce to begin replacing the pines.

The big blow-down is about evenly split between second-growth aspen forest and primary forest still dominated by jack, red and white pines. In both areas the initial impact of the blow-down has been to accelerate succession, by removing the upper canopy of fire-dependent pines, or the post-logging aspen, and releasing shade-tolerant conifer seedlings and saplings of balsam fir, spruce, and cedar. Fires, either prescribed or wild, are sure to occur in much of the blow-down. Wild fires would be very intense and likely consume the seeds of the pines and other conifers, which are now on the ground, and regenerate the forest to aspen and birch. Prescribed fires will be moderately intense, but will still convert most of the burned areas to aspen. With the mitigation procedures that the Forest Service has agreed to, prescribed fires should allow some of the groves of pines and ancient cedars that did not blow down —principally confined to lakeshore areas —to survive. This will save the seed source and potential for future recovery of the forest.

The overall pattern of succession in the BWCAW over the last hundred years has been replacement of pines by aspen after logging and by spruce and fir due to fire exclusion. In the blow-down, these two conversions will continue, because fires will convert more pine forests to aspen, and those parts of the blow-down that do not burn will succeed rapidly to spruce and fir.

Prairie research grants are offered

Prairie Biotic Research, Inc. is a new, nonprofit organization whose purpose is to foster basic biotic research in prairies. One way they do this is through a small grants program. They are especially interested in supporting independent researchers — individuals lacking institutional support — but anyone may apply. Projects may be underway, being planned, or the results being prepared for publication. "Our expectation is that (recipients) will publish (their) findings and/or present them to people who share our interest at a prairie conference or similar forum," said Andrew Williams. "We'll consider prairie projects from anywhere in the USA, dealing with any taxa."

Two $1,000 grants will be awarded in 2002. The deadline for receipt of applications is Jan. 15. To request an application form, e-mail: prairiebioticresearch@hotmail.com, or write to Prairie Biotic Research, Inc., P.O. Box 5424, Madison, WI 53705.

Michael P. Anderson, Rebecca A. Christoffel, Andrew H. Williams and Daniel K. Young are listed as organizers of Prairie Biotic Research, Inc.

Ruth Phipps is honored

Ruth Phipps, a long-time member of the MNPS, was honored at the October meeting. Ruth joined at the second meeting and served as treasurer for at least eight years. After that, she prepared name tags for meetings, and helped with symposiums and at meetings.

MNPS receives grant to inform anglers of earthworm damage

by Ethan Perry

Current research at the Natural Resources Research Institute (NRRI) in Duluth has revealed that European species of earthworms are invading some Minnesota hardwood forests, decimating the diversity of wildflowers. New earthworm populations are established when people transport them, usually by dumping unused fish bait.

The Minnesota Native Plant Society has received a grant from the Minnesota Department of Natural Resources' Environmental Partnership Program to slow the spread of this threat to native plant communities. The project aims to slow the invasion by informing people, particularly anglers, of the problem and promoting efforts to prevent new infestations. We will be producing printed materials (e.g., posters) for educational events and to reach an audience that extends beyond our membership.

Anyone interested in helping with this project (including artists and designers) is asked to contact Ethan Perry at etperry@hotmail.com. We're gearing up to begin the work this winter.

For more information on the damage that non-native earthworms are causing, visit NRRI's website: http://www.nrri.umn.edu/worms

Proposed Spirit Mountain golf course is a concern

The MNPS Conservation Committee alerts members to a controversial Spirit Mountain golf course proposal.

Spirit Mountain, a sacred Anishinabe site, contains a trout stream and one of the largest remaining tracts of old growth northern hardwood forest in Duluth.

The Duluth City Council is considering a development plan that would replace a large portion of the forest with a golf course. The Minnesota DNR has not reviewed the proposal.

According to the Isaac Walton League, DNR field people have raised concerns about the future of the trout stream and forest if the golf course is built. The league wants the DNR field analysis to be the basis for any environmental review instead of the developer's environmental assessment worksheet.

Links to additional information are available on the MNPS website, www.stolaf.edu/depts./biology/mnps.

What field trips would members prefer?

Jason Husveth, chair of the field trip committee, will distribute a questionnaire at the December meeting to determine what types of field trips members would prefer.

The questionnaire will list potential trips throughout Minnesota. Some would require an overnight stay. Suggested sites include Scientific and Natural Areas, state parks, the University of Minnesota Herbarium and the Como Conservatory. Members interested in leading field trips or with ideas for trips should contact Jason. (See page 2 for phone number and addresses.)

Plant Lore

by Thor Kommedahl

What is wild licorice?

Wild licorice is a shrubby perennial in the legume family and is called *Glycyrrhiza lepidota.*

How did it get its name?

Glycyrrhiza means sweet root in Greek, and *lepidota* means scaly, referring to minute brown scales (glands) on young leaflets. It is called wild licorice because its close relative *G. glabra*, which grows in Europe, is the commercial source of licorice in the confectionary industry.

Where does wild licorice grow?

Wild licorice is most abundant on prairies and meadows in most counties of the western half of Minnesota, and in locations from Ontario to Texas.

What is the plant like?

It is a woody plant with compound leaves of 15-19 leaflets each that are dotted with glands. Its white flowers lead to oblong fruits covered with curved prickles. This shrub can be up to three feet tall.

What was licorice used for?

Sioux Indians were said to chew fresh roots to treat toothache. Lewis and Clark reported they roasted roots in the embers, separated the ligament in the root center, and chewed the rest, commenting that it tasted like sweet potato. It is a laxative and is estrogenic. Its derivatives have been used to reduce or cure ulcers.

Does wild licorice have any commercial use today?

Not in official medicine. The mucilage content of wild licorice makes it useful as a soothing cough remedy, but it is not used commercially. Wild licorice can raise blood pressure if ingested.

Whither goes the Minnesota Native Plant Society?

by Joel Dunnette, MNPS president

MNPS has many good purposes for existing. In the next few months I would like to discus with you some of these purposes. Each of us can do only so much, so we are each likely to have particular interest in a few of these topics. Even all together, we will likely need to focus more on some aspects than on others.

Public interest in native plants is increasing. You can see it in various organizations springing up around the area. Some recent examples are Great River Greening, Prairie Enthusiasts, and the Wild Ones. Other organizations such as TNC and MN DNR and MN Audubon, with interests in native plants, have existed for longer. Each group has its own particular focus and area of overlap with MNPS. And sometimes, differences with MNPS.

My question today is "How should MNPS interact with these groups to further our interests as well as cooperate to further our shared interests?" One approach could be to essentially go our own way and try ourselves to cover all the purposes stated in the box on page two of this newsletter. I suspect this would be the easiest approach, but probably not the most effective in conserving native plants.

The approach I advocate is to work with each group that shares interests with us, to find where we can share our enthusiasm, knowledge and actions to greater effect than the sum of the individual groups. This will take effort. Cooperation takes energy and patience and often compromise. But the end effect should be better for native plants. And that is our main goal.

So, what should we be doing? That depends on the interest and energy and abilities of our members. We have no paid staff — only volunteers. And we don't have piles of money. So what we do and what we accomplish depends on me and you. What do you want to see done? And what are you willing to do? There is a world of opportunities and growing public interest.

For myself, I will be leading meetings of MNPS, advising local groups and individuals on establishing and maintaining areas of native plants, giving a few programs on planting prairie, controlling invasive species on local areas, and planting some more areas of my own. A total of a few dozens of hours per year.

My efforts are not much in the big picture. But taken together with yours, I think we can really make a difference for native plants, and share our enjoyment in the accomplishments.

Climate changes threaten partridge pea

(From the University of Minnesota E-News, Oct. 11, 2001)

The partridge pea *(Chamaecrista fasciculata)* could face severe reduction in numbers if climate conditions in the Midwest change to the extremes predicted for the next 25 to 35 years, according to a study published in the Oct. 5 issue of the journal *Science*. The study's principal investigator, Julie R. Etterson, a former doctoral student at the University of Minnesota who conducted the study, is now a postdoctoral research associate in biology at the University of Virginia.

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St. Paul, MN 55108

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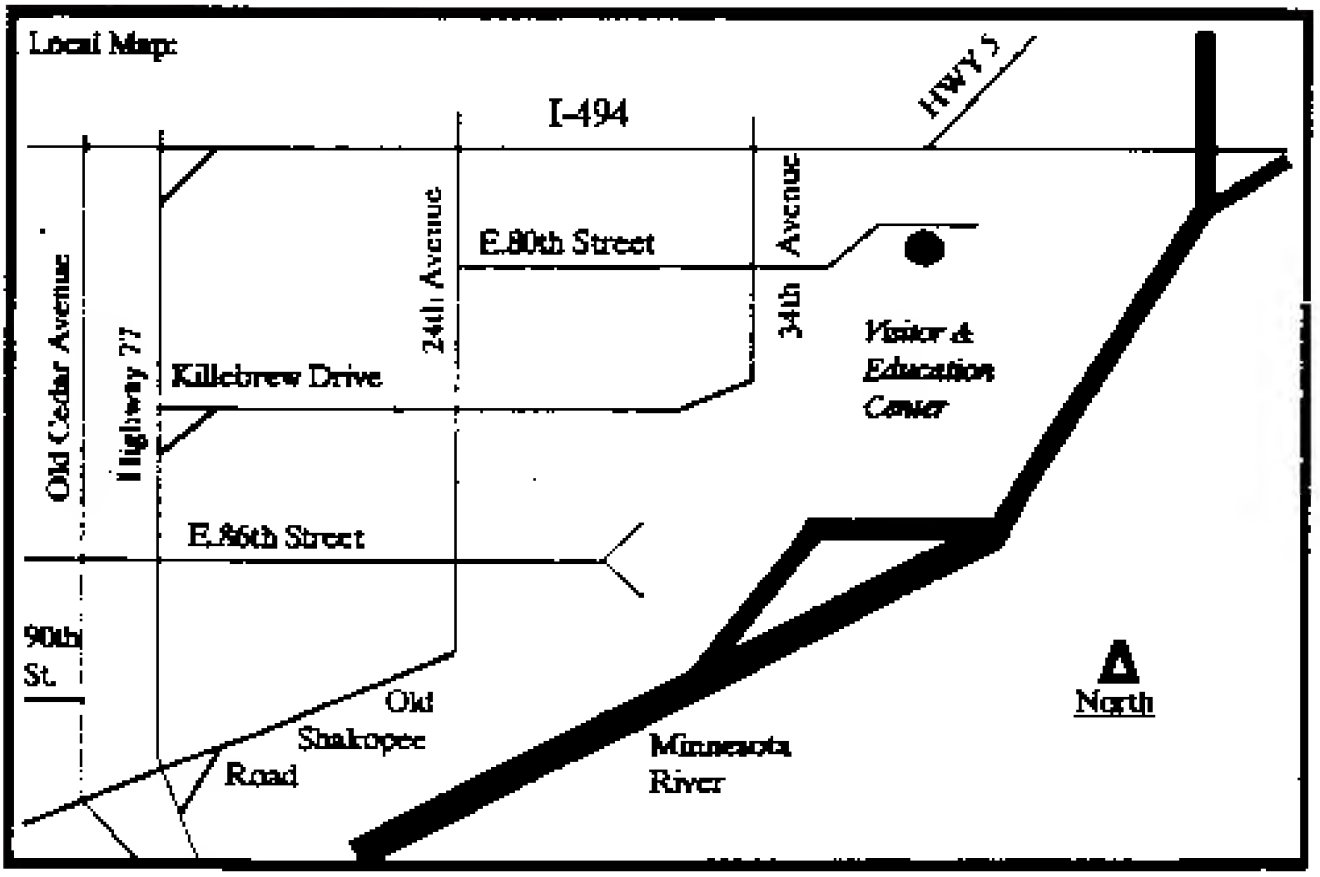

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Feb. 7: "Fire and Plants in the Boundary Waters Canoe Area Wilderness," by Daren Carlson, DNR forest ecologist; **Plant of the Month**: Reed canary grass, by Julia Bohnen of the University of Minnesota Landscape Arboretum.

March 7: "Dwarf Mistletoe;" Plant of the Month: Witch Hazel, both by Don Knutson, Biological Lab Services.

April 4: "The Gypsy Moth in Minnesota," speaker to be announced; **Place of the Month**: Katharine Ordway Natural History Study Area, by Janet Ebaugh.

May 2: "Gardening for Butterflies;" Plant of the Month: A butterfly host or nectaring species, both by Dean Hanson.

June 6
Speaker to be announced; **Plant Sale**

MNPS Web site

http://www.stolaf.edu/depts./biology/mnps

Buckthorn has become a pernicious invader

By Janet R. Larson, Consulting Arborist and Master Gardener (Part 1)

About 150 years ago, a new immigrant was welcomed to North America by a few well-meaning people. This immigrant was seen as an attractive, problem-free addition to our nation that would enhance and beautify our gardens and landscape. But, over the decades, this immigrant would come to be seen as a pernicious invader and a threat to our natural ecosystems. The welcome immigrant-turned-invader is buckthorn.

After the primary loss of native plant habitat to development and agriculture, our native plants of the forest under-story are declining in many areas. Throughout Minnesota and 26 other states, common buckthorn has been quietly invading. The under-story species of our remnant woodlands and savannas, parks and woodlots, wetlands and fencerows, are not secure from this very successful competitor.

Buckthorn is an aggressive invasive species that has escaped from cultivation and has been thriving unchecked for decades. Buckthorn has insidiously reached a critical mass and now occupies the under-story of valuable woodlands all across Minnesota, especially near urban areas. Our native species — both woody and herbaceous — have all but disappeared from the lower canopies of the most severely infested areas. This is a problem.

The buckthorn conference: "The Buck Stops Here!" was held October 3, 2001, at the University of Minnesota Landscape Arboretum in Chanhassen. It was the first of its kind in Minnesota and was very well attended. Approximately 150 people learned about not one, but two species of buckthorn invaders: Common buckthorn (*Rhamnus cathartica)* and glossy buckthorn (*Frangula alnus* — formerly *Rhamnus frangula*), including Tallhedge, Columnar, and Fernleaf cultivars. Information on buckthorn's, biology, history, range, and control was covered. Case studies were described for projects initiated by the city of Minneapolis, neighborhood groups, volunteer coordinators, and property owners.

Continued on page 4

The 2002 MNPS symposium, "Preserving and Restoring Native Wetland Flora," will be Saturday, April 6, at the Arboretum. See details on page 5 of this issue.

Tell us about your conservation issues

Do you know of a conservation issue affecting native plants in Minnesota that deserves more attention? Other members would like to know more about it. Some of us may get involved or write letters to the appropriate government officials or the press, informing them of our views. But we can't act unless we know what's going on out there in the rest of the state.

Let Ethan Perry know about any relevant issues (see contact information on this page), and they will be posted on the Conservation Committee page of the MNPS Web site (www.stolaf.edu/depts/biology/mnps/cc.html). You can visit the site anytime to see what other members have posted and how you can help our native plants.

Joint shrub order offered

Deborah Strohmeyer will be ordering shrubs from the Outback Nursery this spring and have them delivered to her house. You may dovetail into her order. You would be responsible for the full price of your order and for picking them up from her house. Call Deb at 952-943-9743.

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Educating the public about native plants

by Joel Dunnette, MNPS President

One of the stated purposes of MNPS is to educate the public about native plants. And boy, the public does need education! I find that most folks have little understanding about plants, much less native ones. When people hear that I burn my prairie, most ask how I seed it for the coming year — they don't know about herbaceous perennials — even though that is what they have in their own lawns. With so little understanding, it is easy to see why there is little public demand for conserving native plants.

So what does the public need to learn about native plants? And what is our role in teaching them? Keep in mind that most folks know very little; not much beyond that you mow lawns, trees grow for a long time, and farmers and gardeners grow crops and flowers and vegetables that you plant from seed each year.

When I talk to groups about prairie, most are surprised to hear and see the diversity and beauty of native prairie. They don't realize the number of different plants, the variation with habitat conditions, and the wide variety of ways of living that plants have.

The public's knowledge of native plants is much like a kindergartner's knowledge of higher math. We don't need to show them the beauty of trigonometry or calculus — they are just learning to count! So where do we start?

I feel that starting with the simple concept of native (or at least native pre-settlement) natural communities is one simple yet powerful concept. If a person understands this, and comes to value their continuing existence, then they can be motivated to take supportive actions. Their actions may be simple and not very well informed, but like a child learning that 5 is bigger than 2, it is a step on a learning path.

Seeing the tremendous diversity of a native plant community is another good starting point. Knowing the details of plant families is not needed to gain a sense of wonder and appreciation.

Seeing some real examples and having experiences is a mode that is more powerful than words or images. Personal experience is often the best teacher.

There are many people who in their hearts favor conservation. But they may lack the courage to stand alone in support of the natives. Sharing your convictions can bring support from surprising sources.

Helping people see and take these and similar steps is well within the ability of every MNPS member. I will do my part. How about you?

'Think Native' program to focus on Bloomington gardens

by Deborah Strohmeyer

We are pleased with the first year's results of the Think Native program. In brief, the intent of this program is to encourage the awareness and use of native plants. We assist homeowners with creating native plant gardens. A portion of those who participate may also receive a "grant" of native plants.

Think Native has a decentralized structure where project administrators take responsibility for overseeing a defined area. This program also has a designated fund (meaning administrative costs are borne by MNPS) for purchasing plants.

In 2001 we began a pilot program which Dave Crawford administered in the White Bear Lake area. We found the most difficult part of the program was getting the word out so that people would apply. We had roughly 10 applications and were able to award six grants of plants, each worth $200. Congratulations to Peter and Diane Gits, Robin Villwock, Carole Buchanan, Eva Shipley, Deb Gardner, and Pat Dahlman.

Partly because of the unusually hot weather, the gardens were planted in the fall. Dave took "before" pictures and will be taking "after" pictures this next year.

In 2002, we will target the city of Bloomington, and Janet Larson will be our program administrator. Deborah will be putting program details and applications on the MNPS website. We encourage MNPS members to apply. Please spread the word we are now accepting applications.

Remember also that donations to this program are 100 percent tax deductible. We welcome feedback from any member. Further details may be obtained by contacting Deborah Strohmeyer.

Plymouth Expo

The City of Plymouth Yard and Garden Expo will be held Saturday, April 6, from 9 a.m. to 2 p.m. at Plymouth Creek Center. For information, call Kris Hageman at 763-509-5506.

Buckthorn

Continued from page 1

Following are some conference highlights.

Common buckthorn, also called European buckthorn, grows in upland woods, parks, fencerows, yards, gardens, and waste places. It was first imported from Europe in the 1800s and was used primarily in hedge plantings, but it's been used in shelterbelts and wildlife plantings, too. The plants shear nicely, which can reduce flowering and fruiting. The species became a problem when homeowners quit shearing. Shrubs that have been allowed to grow naturally become small trees. Female plants produce vast quantities of black fruit that are transported through bird droppings. The result is what we now see in the woods and neighborhoods of 68 of Minnesota's 87 counties.

Glossy buckthorn and its cultivars have been used as upland landscape shrubs; they thrive primarily in moist and wet soils. This species has spread through wetland areas and adjacent woods wherever there is a nearby seed source. In heavily infested areas, both common and glossy buckthorn will grow together in upland and lowland habitats. We observed this along the Bog Board Walk and the Green Heron Arboretum trails. Eighty years ago, Minneapolis school teacher and botanist Eloise Butler wrote about the invasiveness of glossy buckthorn in her wildflower preserve.

Banned from nursery trade

2001 was the first year that glossy buckthorn and its cultivars could no longer be sold in Minnesota. The Minnesota Department of Agriculture placed common buckthorn on the "Restricted Noxious Weed List" in 1999 and included glossy buckthorn effective Jan. 1, 2001. Common buckthorn hasn't been sold since the 1930s, when research proved it was the alternate host of oat crown rust. However, birds continue to spread it through their droppings. On the other hand, glossy buckthorn has been sold in numbers as high as 60,000 per year from wholesalers in Minnesota and Wisconsin for the last 30 years.

Why it is so successful

- No predators eat the twigs or seedlings;
- Longer growing season than our natives, up to 58 days longer;
- Fibrous root system with mycorrhizal benefits;
- Grows in many habitats due to its tolerance of a wide range of soil and light conditions;
- Rapid growth rate;
- Vigorous re-sprouting after being cut, up to 6 feet in one season;
- Copious fruit and seed producer;
- Glossy buckthorn produces flowers and fruit from June through September on good sites (4 months!);
- Seeds are spread by birds;
- Seeds remains viable up to six years in the soil;
- High seed germination rate.

Why buckthorn is bad

- It out-competes our native plants for light, moisture, and nutrients; allelopathic chemicals are said to be in the fruit and leaves, inhibiting germination and growth of natives.
- Its fruits are not a preferred food source for birds, but they are eaten when other foods have diminished. With native fruit-bearing plants on the decline, there's not much else to eat.
- Its fruits are messy and a laxative for birds; they stain cars, decks, concrete.
- Nesting birds are more prone to predation in the lower canopy of buckthorns, so bird nesting success rate is lower.
- It creates a nearly impenetrable thicket, and dark under-story with no herb-layer.
- It has no fall color; leaves remain green until November.
- It is an alternate host for crop pests: soybean aphid and crown rust fungus of oats.
- It causes a safety concern for park users in urban woodlands, because visibility is severely reduced. (However, some property owners like the privacy buckthorn provides.)
- If left uncontrolled, it will turn native woodlands into near-monocultures
- It is expensive and time-consuming to remove once it reaches a critical mass.
- After removal of adults, a ground cover of seedlings can emerge from the large seed bank in the soil; therefore, a long-term commitment is needed with eradication efforts.
- Its hard, dense wood dulls saw blades and is tiring to haul.
- Thorns on twig ends make handling dangerous.
- The spread of the species threatens the future of our woodlands and wetlands.

One good feature

Buckthorn is a beautiful golden-orange to yellow and brown, dense wood with a nice grain. Wood workers make beautiful carvings from this wood. Carvings and turnings were on display at the conference. We hope an industry will emerge that will utilize this species.

Control or reduction?

Where buckthorn has not completely infested an area, control is a reality. Where it has created a near-monoculture throughout a sizable area, reduction might be a better reality than control. A single stem of buckthorn cut down to the ground, and not chemically treated, will re-sprout from the stump and grow many new stems up to 6 feet in a single season.

Time to apply

For larger buckthorn control projects, some type of chemical treatment is the best control method. It is important NOT to treat during the spring-flush growth period. This is a time when the plant is using its stored energy reserves to grow, from the break of dormancy in late March until about June 1.

[Part 2 of this report, in the next issue, will discuss buckthorn control in more detail.]

Wetlands are symposium topic

Mark your calendars now for the 2002 MNPS Symposium, "Preserving and Restoring Native Wetland Flora," to be held at the University of Minnesota Arboretum in Chanhassan Saturday, April 6, from 8:45 a.m. to 3:30 p.m. Registration will open in the Arboretum auditorium at 8:15 a.m.

This symposium is co-sponsored by MNPS and the Arboretum. In the morning, there will be two excellent speakers. Dr. Susan Galatowitsch, a professor of landscape ecology at the University of Minnesota, will address restoring native wetland flora within agricultural and urban wetlands. Julia Bohnen, who has worked with Dr. Galatowitsch since the inception of the Spring Peeper Meadow restoration project, will discuss the project history, process, and site-specific design solutions for restoring a diverse native wetland community to the meadow.

Topics of afternoon workshops are how to use taxonomic keys for beginning wetland plant identification; advanced wetland plant identification; how to use the DNR's new Lakescaping CD to select plants for lakeshore restorations; and guided tours of Spring Peeper Meadow. Each attendee may participate in two workshops. You may also explore the Arboretum on your own.

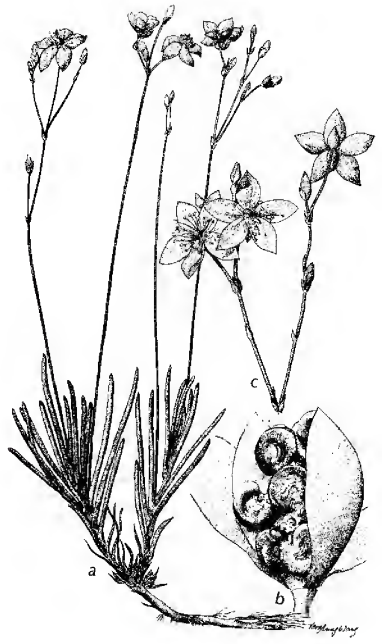
The cost is $35 for members of MNPS and the Arboretum and $45 for non-members. The fee includes gate admission, continental breakfast, lunch and handouts. Non-members may join either group at the time of registration. Members of both organizations will receive a brochure in a separate mailing. Register soon, as space is limited.

Potential exhibitors or co-sponsors should contact Shirley Mah Kooyman at 952-443-1516, or e-mail her at shirley@arboretum.umn.edu.

Rough-seeded fameflower

by Hannah Dunevitz, Regional Plant Ecologist, Natural Heritage Program, Minnesota DNR. Abstract of plant-of-the-month talk Dec. 6, 2001.

At first glance, the rough-seeded fameflower *(Talinum rugospermum)*, a little eight-inch-tall plant, seems an unlikely candidate for the name fameflower. It is not particularly spectacular or well-known. Its name derives from the curious feature of its precise but short blooming time. Flowers are open only between 3 and 6 p.m. — and, as the saying goes, fame is fleeting. Other species of *Talinum* bloom at different times; the closely related but more easterly occurring *Talinum teretifolium* blooms between noon and 3 p.m. The reason for the specific blooming time of *Talinum* species is unknown, but it may be related to the habits of sweat bees, which appear to be the primary pollinators of this genus.



Drawing by Vera Ming Wong in "Minnesota Endangered Flora and Fauna," reprinted with permission. © 1988, State of Minnesota, Department of Natural Resources.

The rough-seeded fameflower is a succulent plant that occurs in harsh, very dry environments. It is generally found in sand prairie and sand savanna native plant communities, but it also occurs occasionally on rock outcrops. Fred Harris, a plant ecologist with the Minnesota DNR, found in his studies of the physiology of *Talinum* that it can survive in these environments in part because of its specialized photosynthetic pathways. When there is sufficient moisture, it uses C3 photosynthesis, in which stomata are open and carbon dioxide can flow freely into the plant. Under very dry conditions, however, *Talinum* switches to a specialized version of CAM photosynthesis, in which stomata stay closed and oxygen and carbon dioxide circulate within the plant. The succulent leaves of the plant also help by storing moisture, just as those of cacti do.

Rough-seeded fameflower is a member of the purslane family *(Portulacaceae)*, along with better known species such as Garden purslane and Spring beauty. The flowers of *Talinum rugospermum* are about one centimeter across, have five roseate petals, two sepals, a three-lobed style, 12 to 25 stamens, and rough, finely wrinkled seeds. They bloom in July and August, sometimes twice in any given season. Plants have short, narrow, succulent leaves and taproots.

Talinum rugospermum is a state-endangered species in Minnesota, and is rare throughout most of its range. It occurs only in the United States, in the Midwest, in Texas and Louisiana. In Minnesota, 24 occurrences have been documented, all within 10 sites in the east-central and southeastern parts of the state. Sand prairie and savanna habitats include Kellogg-Weaver Dunes Scientific and Natural Area, Whitewater Wildlife Management Area, and Cannon River Wilderness Park, Rice County. In these places, vegetation is sparse and the sand is continually shifting. The species also occurs in very small populations on basalt and sandstone outcrops.

Three members nominated for positions on society's board

Members will fill three board positions at the March meeting. Biographies of those nominated at this time follow.

Don Knutson

Don Knutson is a former board member and past president of the Minnesota Native Plant Society. His professional work at Biological Lab Services concerns mold fungi. He performs mold-fungi analysis in buildings and tests manufactured products for susceptibility to fungal degradation.

Don is working on the natural history of black spruce dwarf mistletoe, with emphasis on seedling inoculations: "The idea is to have a 'forest' of infected spruce seedlings in pots so as to be able to study tree-mistletoe interactions as a function of host nutrition, day length and temperature and so on," he wrote. "Are mycorrhizal associates the same on infected and uninfected black spruce? Are sex ratios altered by environmental influences? Like most native plants, we know so little about this one that studies need necessarily to be concerned with basic biological information." Don will speak about this project at the March 7 MNPS meeting.

Jason Husveth

Jason Husveth has been a member of the Minnesota Native Plant Society since 1998 and a board member since the summer of 2001. He is responsible for organizing field trips for 2001-2002. He led a field trip to the Anoka Sand Plain and a winter botany workshop at the Wildlife Refuge in 2001. Jason assisted with producing and illustrating the 2001 MNPS symposium brochure, and has a more active role in planning this year's symposium. He has spoken at several meetings.

Jason moved to Minnesota in 1995 to pursue his master's degree at the University of Minnesota. His thesis focused on land use and watershed urbanization impacts to Minnesota's native wetland flora and fauna. He holds a bachelor's degree in Environmental Planning and Design/ Landscape Architecture from Rutgers University. He is self-employed as a landscape ecologist and botanist. As a board member, he is most interested in providing numerous opportunities for members to experience Minnesota's native flora in the field and to provide access for members to learn about the many native plant-related resources.

Douglas Mensing

Douglas Mensing is a senior ecologist and manager of the Twin Cities office of Applied Ecological Services, Inc. He has 10 years of field and research experience in ecological, biological, and environmental sciences.

Doug is a Professional Wetland Scientist (PWS) certified by the Society for Wetland Scientists and a volunteer supervisor for Great River Greening restoration events. He received a bachelor's degree in Environmental Science from Valparaiso University, Valparaiso, Ind., and a master's degree in Conservation Biology from the University of Minnesota. At Minnesota, his graduate research assistantship under Dr. Susan Galatowitsch focused on assessing wetland quality using ecological indicators. His independent research involved investigating the effects of human activities on the biodiversity of riparian wetlands and on spatio-temporal changes in wetland vegetation community patterns.

"I would be honored to represent this organization as a Board member in order to further the accomplishments of the Society," Doug wrote. "In particular, I would like to increase field trip opportunities and increase the MNPS's exposure through more outreach and educational activities."

New plants are appearing in Nebraska

Several plants are expanding their ranges in Nebraska, according to Bob Kaul, a friend of MNPS member Tom Morley. Kaul is plotting the movements of *Crepis tectorium* (narrow-leaved hawk's-beard), which is spreading southwestward from Iowa into northeastern Nebraska. Exotic woody plants that are expanding fast are *Rosa multiflora, Ailanthus altissima, Elaeagnus umbellate,* and *Lonicera maackii. Morus alba* and *Maclura pomifera* are already at "alarming levels." Tree-of-heaven is forming dense thickets and invading native prairies in the countryside.

"*Prunus serotina*, originally native here only near the Missouri River, has spread madly westward to the central counties," Kaul wrote. "Another native plant that's spread from riverside counties is the dreaded honeyvine, *Cynachum leave*, which is as bad as bindweed but grows much larger, climbing 30 feet into the trees. It's strangling soybeans and corn in the fields, and here in Lincoln it drapes shrubs and fences."

Conferences scheduled

Medicinal, aromatic plants

The PCA's Medicinal Plant Working Group will hold its first symposium, "Industrial Leadership for the Preservation of Medicinal and Aromatic Plants," Feb. 26 and 27 in Philadelphia, Penn. Information is available on the Web at: www.plantconservation.org/ mpwgconference.

Michigan wildflowers

The 15th annual Michigan Wildflower Conference will be March 3 and 4 at Michigan State University, East Lansing, Mich. Information is available at www.wildflowersmich.org.

Ephemeral wetlands

The EPA Region 5 Midwest Ephemeral Wetlands Conference will be in Chicago Feb. 20 and 21. Information is at www.epa.gov/ R5water/ephemeralwetlands

Fighting Urban Sprawl

(Notes from MNPS talk Oct. 4, 2001 by Lee Ronning, President and CEO of 1000 Friends of Minnesota)

Minnesota is losing approximately 12,000 acres of farmland every year to urbanization. Nationwide, the loss is 1.5 to 2 million acres per year. This loss is especially ominous because urban-influenced counties produce 87 percent of our nation's fruit, 86 percent of our vegetables, 79 percent of our milk, 47 percent of our grain and 45 percent of our nation's meat products. Because of this urban sprawl, the U.S. will cease exporting food by 2025, according to David Pimentel of Cornell University. All of our food products will be needed to feed our own population.

Suburban sprawl in Minnesota is increasing faster than our population is growing. From 1992 to 1997, average annual population growth in the seven-county metro area was 1.4 percent; average annual increase in acres of land converted to urban uses was 5.3 percent. Statewide figures are similar.

1000 Friends of Minnesota is leading the Smart Growth campaign. This organization is seeking to bring together a network of diverse groups to stop urban sprawl and create smart regional patterns of development in the Twin Cities and throughout the state. "Smart Growth" accepts the fact that growth is happening, and attempts to find a balance between growth and other community values, such as environmental preservation and social equity. Smart Growth is collaborative in nature, and includes business partnerships.

Smart Growth tools available for protecting natural resources and agricultural lands include comprehensive planning, conservation zoning techniques, Right-to-Farm ordinances, tax incentives, agricultural economic development and farm transfer planning . Three incentive-based tools that are relatively new in Minnesota are conservation easements, purchased development rights and transfer of development credits.

Conservation easements are voluntary agreements that permanently restrict future development while retaining other property rights. The land remains in private ownership and on the tax roles; no public access is required. The easements are held by a land trust or government agency to ensure long-term monitoring and protection. Purchased development rights are often established by units of government to provide a mechanism to pay for conservation easements. This incentive-based tool helps keep the agricultural economy viable. The land remains in private ownership and on the tax roles. The Minnesota Legislature recently passed enabling legislation.

Transfer of development credits simultaneously protects open space while allowing more compact development in areas best suited for it. Development credits are purchased from "sending areas" and applied to "receiving areas," where greater density is allowed. The price is set by private markets.

In addition to its work with Smart Growth, 1000 Friends is working with the Green Corridor project in Chisago and Washington counties, the Farmland and Natural Areas project in Dakota County, the Department of Agriculture and the Department of Natural Resources.

Plant Lore

by Thor Kommedahl

What is Labrador tea?

Labrador tea is *Ledum groenlandicum* in the heath family. Recent DNA studies may lead to its being renamed a species of *Rhododendron.*

Why is it called by this name?

Ledum is an old Greek name for rockrose (*Cistus*) which produces a similar fragrance. Tea is brewed from dried leaves by the native peoples of Labrador and elsewhere. Thoreau in 1858 noted that "it has a rather agreeable fragrance, between turpentine and strawberries."

What kind of a plant is it?

It is a low northern shrub (1-3 feet) with leathery, evergreen leaves that have rolled edges and white or rusty hairs underneath. Twigs are also hairy. Small white flowers are seen in clusters in May-June or later. Leaves are fragrant when crushed.

Where is it found?

It grows in sphagnum bogs and other wet habitats usually in woods in Northeastern Minnesota (north of the tension zone) and elsewhere in subarctic Canada and in Greenland.

Is it edible, toxic, or medicinal?

Its use as food is limited to tea. Tea from leaves are rich in vitamin C. A toxic substance known as "ledol" occurs in European species but has not been reported for North American species. American Indians used the plant as a tonic, and to treat colds, arthritis, and headaches.

Are there other uses?

Leaves have been used to repel moths in clothes, and put in grain to repel mice. Decoctions kill lice and other insects, but plants are browsed by caribou and moose.

Minnesota Native Plant Society
University of Minnesota
220 Biological Sciences Center
St. Paul, MN 55108

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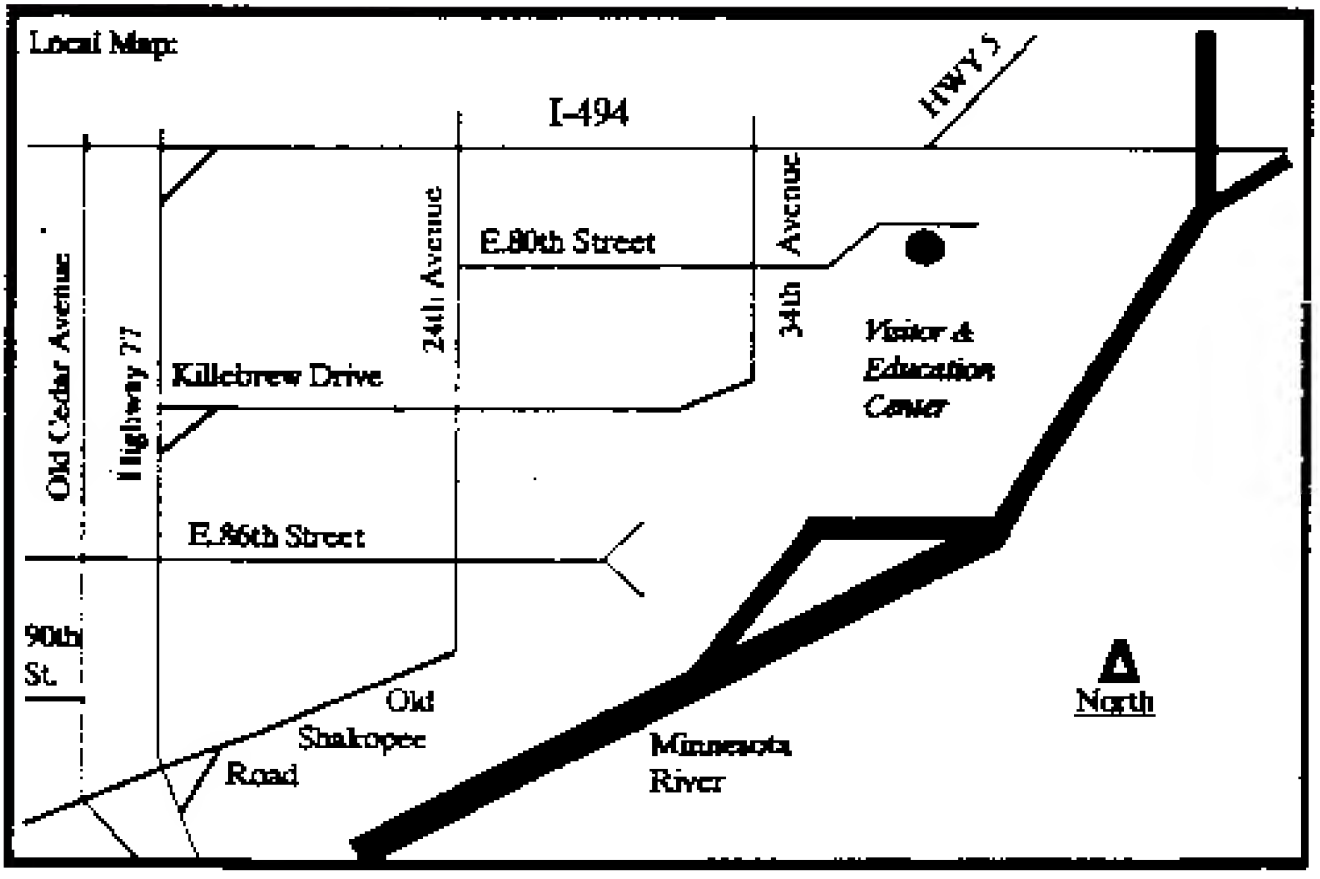

Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 21 Number 3 **Spring 2002**

Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th St.
Bloomington, MN 55425-1600
952-854-5900

6:30 p.m. — Building east door opens
6:30 p.m. — Refreshments, information, Room A
7 – 9 p.m. —Program, society business
7:30 p.m. — Building door is locked
9:30 p.m. — Building closes

Programs

The MNPS meets the first Thursday in October, November, December, February, March, April, May and June. Check the Web page for additional program information.

May 2: "Gardening with Butterflies," by Dean Hanson; **Plant of the Month**: Wild Lupine, by Robert Dana, DNR.

June 6: "Sustainable Spiritual Design: Visioning Your Own Sacred Space," by Douglas Owens-Pike, Energyscapes; **Plant Sale** following the meeting.

Plant sale guidelines

Members are urged to donate plants for the June 6 sale, which is our annual fundraiser. Plants must have been grown in your garden or started from seed. Do not dig wild plants. Put the plants in individual containers and label them. Members who help will have first choice of plants. To volunteer, call Gerry Drewry at 651-463-8006.

MNPS Web site

http://www.stolaf.edu/depts/biology/mnps
e-mail: MNPS@HotPOP.com

Buckthorn can be controlled or reduced

Part II
By Janet R. Larson, Consulting Arborist and Master Gardener
[Note: Part I, published in the Winter 2002 issue, discussed the differences between common and glossy buckthorn and the reasons why both species are listed as noxious weeds in Minnesota.]

Control or reduction?

Where buckthorn has not completely infested an area, control is a reality. Where it has created a near monoculture throughout a sizable area, reduction might be a better reality than control. A single stem of buckthorn cut down to the ground and not chemically treated will re-sprout from the stump and grow many new stems up to six feet in a single season. In one to two years, the plant can be producing fruit again. "If you cut it, you just anger it," says Norm Erickson of Rochester. This aggressive re-growth must be stopped or the plant will soon reach its former size, take up more space, and continue to exist indefinitely.

Chemical treatments

For larger buckthorn control projects, some type of chemical treatment is the best control method. It is important *not* to treat during the spring-flush growth period. This is a time when the plant is using its stored energy reserves to grow, from the break of dormancy in late March until about June 1. During the spring-flush, the plant generally does not store energy, it spends energy. Chemical treatments work best when the plant is dormant or transporting sugars to its root system (storing energy).

Summer, autumn, and winter are the three seasons when chemical treatment of buckthorn is effective. Late September through November is a convenient time, since buckthorn leaves remain green and attached, while leaves of our native plants are turning color, falling, and gone.When using herbicides, always follow label instructions and take recommended precautions; be certain that your chemical is labeled for your site.

Continued on page 4

Be a Prairie Care volunteer at Wild River State Park

by Dave Crawford

If you like plants, being outdoors, and learning about the natural world, consider helping with Wild River State Park's Prairie Care Project. We need your help (and the help of other interested persons you know) to make the project a success this summer. You will make a big difference to the future of the park, and you'll learn about prairies firsthand.

There are two ways you can help. The ability to use maps and to walk off-trail on uneven ground are needed for both.

Species Steward: Locate, identify, and mark sites of occurrence and record blooming and ripening time of a native plant species assigned by park staff. Collect seed when it is ripe. Stewards are needed starting in mid-spring to mid-summer, with a minimum commitment of once every two weeks throughout the process. Being a Species Steward will give you an opportunity to learn a tremendous amount about your species, and see parts of the park that you might otherwise miss. Wild River provides detailed data on identification, observation, and locations of your species.

Collector: Arrange in advance to come to the park on a specific day and collect seeds of one or more species that are ripe at the time of your visit, using directions we provide. We also need people whom we can call on short notice to collect seed that is ripe and about to be lost.

All seeds collected will be used on restoration sites within Wild River State Park. Prairie Care participants who meet or exceed our goals are eligible for recognition awards such as Prairie Care patches or certificates.

To volunteer with the Prairie Care Project, please call or e-mail Dave Crawford, Park Naturalist, Wild River StatePark, 39797 Park Trail, Center City, MN 55012, 651-583-2925 (Visitor Center), dave.crawford@dnr.state.mn.us.

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

MNPS Board of Directors

Three field trips scheduled in May

Two Duluth trips May 19

The Minnesota Native Plant Society, the Hartley Nature Center, and the Arrowhead Chapter of Wild Ones are sponsoring two field trips in Duluth Sunday, May 19. Trip leaders will be Carol Reschke, DNR County Biological Survey ecologist, and Ethan Perry and Meredith Cornett, Minnesota Native Plant Society board members.

9 a.m. to noon: Magney-Snively City Park, Duluth

If the season progresses normally, this hardwood forest should host a wide variety of spring-blooming wildflowers at their most spectacular peak. Chances are that one of them will be *Moschatel*, a rarity of mature sugar maple forests that is listed as a species of "special concern" by the DNR.

1:30 to 3:30 p.m.: Lighthouse Point, Two Harbors

This will be a unique chance to have the unusual plants of the rocky shoreline identified and described by Carol Reschke, who studies the natural communities that persist in the harsh conditions along Lake Superior.

There is no cost for these trips, but each will be limited to 20 to 25 people. Register for one or both trips by contacting Ethan Perry at etperry@hotmail.com or by calling him at 218-728-6258. He will send directions to the meeting locations to those who sign up.

Wildflower Walk May 25

Jason Husveth will lead a Spring Wildflower Walk from 9 a.m. to 12:30 p.m. Saturday, May 25, at the Minnesota Valley Wildlife Refuge.

During the walk, beginners and experienced naturalists will learn how to identify herbaceous plants, shrubs and trees in the valley.

Participants will meet in the Fireplace Room at the refuge at 9 a.m. Jason, a professional ecologist/ botanist, will give an introductory talk on the spring flora and the use of plant keys and wildflower guides. Participants will visit prairie, forest and wetland plant communities close to the building.

The walk will be held rain or shine, for up to 30 participants. Bring a wildflower guide, boots and a hand lens or magnifying glass. To register, call the refuge at 952-854-5900.

In memory of Tom Morley

Dr. Thomas Morley, professor emeritus at the University of Minnesota, died Saturday, Feb. 2, 2002, at his home. He was 85.

Dr. Morley received his A.B. (1940), M.A. (1941), and Ph.D. (1949) degrees in botany at the University of California, Berkeley. A scholar's son, his father, S. Griswold Morley, was the president of the Modern Language Association of America during the 1950s. Dr. Morley was predeceased by a sister, and is survived by her children and a brother.

Tom Morley joined the Botany Department (now Plant Biology) in the fall of 1949 to share in the teaching of taxonomy with Gerald Ownbey (then curator of the herbarium). He was successful in helping recruit such distinguished faculty as Eville Gorham. After advising several graduate students, including Kingsley Stern, Lawrence C.W. Jensen, and Barbara Delaney, he retired in 1987.

Dr. Morley was a specialist in the genera *Mouriri* and *Votomita* (tropical trees of the *Melastomataceae*), and he described several new species in these groups from central Amazonia, where he conducted field work around Manaus and Belem, Brazil. During his tenure at the University of Minnesota, Dr. Morley also developed an extensive, firsthand knowledge of Minnesota's native flora. He revised and updated Frederic Clements' original "Guide to Spring Flowers," which is now used as a standard spring text. He co-authored with Gerald Ownbey "Vascular Plants of Minnesota: A Checklist and Atlas," another seminal work for the state.

A strong advocate for the preservation of nature, Tom Morley was a charter member of the Minnesota Chapter of the Nature Conservancy and served on the board during the 1970s. He was also active in the Minnesota Native Plant Society, having a special concern for rare plants and serving as an early champion of buckthorn eradication in Minnesota natural areas. He enjoyed canoeing and was a generous contributor to the Friends of the Boundary Waters Wilderness.

In retirement, Tom Morley maintained an office adjacent to the herbarium in the Biological Sciences Building on the Saint Paul campus of the University. He was a familiar face around the department — remembered for his habit of walking to work each day across the expanse of experimental fields, even in the coldest of Minnesota winters. His daily routines contributed to the rhythm of life at the University, including his climbing the eight flights of stairs to his office, which he performed until the very day before his death. A soft spoken and kind man, he is missed by his colleagues.

The family asks that memorials be sent to the Lake Itasca Forestry & Biology Station, University of Minnesota Foundation, 200 Oak St. NE (Suite 500), Minneapolis MN 55455.

Buckthorn

Continued from page 1

Cut stump treatment

During cutting and brush-hauling operations, stumps are easily lost under leaves and debris. Marking stump locations with wire flags, similar to those used by utilities to mark underground pipes or wires, is helpful when it comes time to locate the stump for treatment after an area has been cleared. Secure the flags well, so they will not be dragged away with the brush.

Stumps can be chemically treated with a paint brush, a wick applicator, or with an ultra low volume spray nozzle and wand. It is very important that bark on the sides of the stump, including exposed root flares, be treated as well as the top of the stump. Under the bark, many latent buds have the capability to re-sprout with vigor. Chemicals are most effective if applied within 24 hours, but can be applied up to 48 hours after the cutting.

Frill cuts with chemical spray

Wound the bark with an axe at a 45-degree angle around the circumference of the tree, to create a frill. It's not necessary to girdle the stem completely. Then apply herbicide spray to exposed cut areas and adjacent bark. This is an effective method when trees can be left standing. Consider this method especially when buckthorn has overtaken steep slopes. If you physically remove all the buckthorn, you set the site up for erosion. This method works well on stems greater than 4 inches in diameter.

Basal bark treatment

When mixed with a diluent (a solvent that may contain dye that can be mixed with some herbicides), ester formulations of Triclopyr can be applied directly to the bark at the base of the tree to provide effective control. Spray the lowest 1 1/2 feet of bark around the entire circumference of the tree. For diameters 2 inches or less, only one side of the stem needs to be sprayed. This is a fast, effective way of controlling trees up to 6 inches in diameter on large sites. Dead trees can be left standing or cut at a later time. Garlon 4 and Crossbow are effective brand-name chemicals for basal bark treatment.

Herbicides that work well

1. Roundup (now off patent; Glyphosate active ingredient) = Razor, GlyStar Plus, others. Mix with water for stump, frill and foliar applications.
- A 25 percent solution is needed for stump and frill methods.
- A 3 percent solution is needed for foliar spray.

2. Rodeo (now off patent; for aquatic use; Glyphosate active ingredient) = Aqua Neat, others.
- Same rates as Roundup apply for Rodeo

3. Garlon 3A (Triclopyramine active ingredient) = Ortho Brush B-Gon
- Mix with water for stump and frill applications.

4. Garlon 4 (Triclopyr ester active ingredient) = Crossbow, (Pathfinder is ready-to-use)
- Mix with diluent or kerosene for stump, frill, and basal bark treatments
- Mix with water for foliar applications

Tordon is not recommended.

Spraying in a buckthorn thicket

1. In densely infested areas, use a hand-held tank sprayer; backpack sprayers can be difficult to negotiate through the woods.

2. An ultra low volume spray wand can cut chemical use by 75 percent.

3. Wear appropriate clothing when using chemicals, especially when mixing concentrate. Use neoprene gloves, not latex, cloth, or leather. Wear goggles or safety glasses when mixing chemicals. Be sure to read and follow label instructions.

Mechanical control

Mechanical control is not possible with large infestations of buckthorn; it is extraordinarily labor-intensive. The following methods are recommended for people who wish to avoid chemicals and have small areas to clear.

Hand pulling

Pulling plants out of the ground by hand works well for stems 1/2-inch diameter or less. The soil must be moist, or your efforts will be frustrating and with very little result. When the soil is dry, the plants won't budge. If they do budge, they break off, leaving the root system intact. To remove, pull at the base of the stem lightly to loosen the soil, then pull again to dislodge the plant from the ground. When you pull buckthorn, you will discover buckthorn's dense, black, highly successful, fibrous, root system.

Digging

With a sharp shovel blade, it is possible to cut the roots around small stems (about 1 inch in diameter or less). Stomp your shovel blade into the ground up to a foot away from the stem, and pull the shovel handle back; this will sever roots, but may need to be repeated. Do this all around the stem until all lateral roots are severed. There will likely be a couple of central roots to cut, too. This method works well with single-stemmed plants, but is quite difficult with shrubby individuals that have re-sprouted after a previous cutting.

Wrenching

A few tools are available on the market to facilitate the manual leveraging of a woody stem or stems out of the ground. With a steel clamp or claw, a stem is grasped; then the tool handle becomes a lever, bending the stem down and lifting the roots out of the ground. Tools range in size and will pull stems up to 2 inches in

diameter. The largest tools are heavy and need to be wielded by large, strong individuals. Some communities have organized to purchase various wrench sizes and have made them available for free rental from local hardware stores.

Continuous cutting

Cutting buckthorn without chemically treating the stump is not recommended unless there are only a few plants to remove and you are willing to re-cut new sprout-growth nearly every week for the entire growing season and beyond. Continuous cutting will exhaust the plant of its extensive energy reserves. It may exhaust you, too!

Tin can method

This approach, developed by Steve Glass, University of Wisconsin Arboretum, is only recommended for very small removal projects and for stump sizes small enough to fit under a metal can. Find a can large enough to fit over the stump and root flare. Cut the stump 1 to 2 inches shorter than the height of the can. Since buckthorn re-sprouts from latent buds under the bark, including stump bark, it is important that the inverted can cover all exposed bark. Drive long nails through the can into the stump to secure it in place. Sprouts that grow into the can will not have enough light and will die. Leave the can in place for one to two complete growing seasons.

Burning

John Moriarty, Ramsey County Parks and Recreation Department, reported on a study he conducted with Hennepin Parks to control buckthorn in Carver Park. Burning can be a good technique for forest or park-like settings, but is not really practical for homeowners. Burn timing is very critical, and it may be difficult to coordinate factors such as ground fuel, moisture, wind speed in the woods, and approval from the local fire department. Fire is a management tool, but it will not eliminate buckthorn. A recent study out of DePaul University explains why it is difficult to burn in buckthorn-infested sites, due to the rapid degradation of the leaf litter.

Overwhelmed by it all?

If you've worked in a heavily buckthorn-infested area, it is easy to feel overwhelmed. Don't give up. Buckthorn has had decades to get a root-hold ahead of those of us who would like to eliminate it. However, with the control methods described here, total elimination is not really a possibility. These plants are simply too widespread, and the volume of their biomass is staggering. The cost in terms of human-power, time, equipment and funds is unreasonably high in economic terms. Reduction of the critical mass *is* a possibility. Following are my suggestions for those who would like to do something, but have limited time and budget. Prioritize. Doing *something* is far better than leaving the invasion unchecked.

Priorities for a limited budget

1. Partner with conservation groups, neighborhood groups, your municipality, volunteers.

2. Search locally for potential grant funding, then write grant proposals. Ask local businesses and foundations for assistance.

3. Survey your site to find treasure pockets of remaining native plants. Clear around these plants first to release them from their buckthorn competition. Protect them during cutting and removal. Sometimes these natives are very, very small, but when they are freed, they bounce back with new growth. Find a local native plant expert to help you with identification. Mark them with flags.

4. Protect quality areas that are only marginally infested.

5. Remove female buckthorn first. Mark them in late fall, when full of fruit, for later removal.

6. Prioritize removals to be in high-profile areas (along bike paths, parkways, play areas).

7. Publicize what you're doing. Put up informational signs in the project area, distribute flyers to nearby residents, write an article for your local paper or association.

8. Stop to answer questions of all those who inquire.

Hope for a biological control

"Good news came this month," wrote Cynthia Boyd in the St. Paul Pioneer Press, Sept. 26, 2001, "in a $20,000 report commissioned by the state Department of Natural Resources from the Center for Applied Bioscience International in Delmont, Switzerland. The 100-page research paper includes a list of 14 insects that are possible natural predators (of buckthorn), thus potential control agents." According to Luke Skinner and Jay Rendall, coordinators in the DNR's exotic species program, the feasibility study was completed in August, but the entire study may take up to 10 years to complete, provided funds to continue the research materialize. The next step will be to test the 14 species and determine which ones harm buckthorn exclusively. Tax-deductible contributions can be made to: DNR Buckthorn Research Fund, Exotic Species Program, 500 Lafayette Rd., St. Paul, MN 55155-4025.

A Web page within the MN DNR Web site contains buckthorn biocontrol research updates at: www.dnr.state.mn.us. (Search on buckthorn biocontrol).

The herbicide information given in this article is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement is implied.

The MNPS has received a donation to the Think Native Program in memory of Wright and Elizabeth Reed.

Birds are most diverse in rural areas

by Kim Chapman, visiting assistant professor, biology and environmental studies, Macalester College. Abstract of his Nov. 1, 2001, talk on "For the Birds: Nature reserves, rural lands and suburbs' contribution to the avifauna of the Twin Cities region."

Kim Chapman spoke about his doctoral research. His message was positive, yet cautionary. The increasingly intensive use of land which the Twin Cities region is experiencing raises concerns that species might disappear from the regional biota. Kim studied the responses of bird, tree, and shrub species to the variety of land-use types and habitats in the region. Working in some 300 plots located in nature reserves such as Wild River State Park and Sherburne National Wildlife Refuge, in rural lands, and in the suburbs of the north metro area, Kim measured species abundances in a variety of habitats, from grasslands to forests. He sought to understand how communities or species simultaneously varied as land use and habitat varied.

Unexpectedly, within single plots he found that bird richness and diversity were equal at all land-use intensities — in nature reserves, rural lands or suburbs. But looking across the entire region, the rural lands supported the greatest bird richness and diversity, with reserves being slightly lower. His results for trees and shrubs (which he did not present) were somewhat different than results for birds. For example, rural lands supported fewer species of woody plants than reserves and suburbs, but the increased woody plant diversity in suburbs was largely due to planting of non-native species.

In general, suburban style development depressed bird species diversity and shrub abundance over large areas. In suburban"structural" grasslands and savannas, often with short grass, pavement and buildings, the abundance of non-native species was much higher than elsewhere in the region. But on a positive note, wild vegetation and forest remnants in suburbs were used by several native bird species, such as Gray Catbird and Baltimore Oriole.

Interestingly, the bird communities of forests in reserves and rural lands were similar, while the grasslands and savannas in reserves and rural lands were less similar to each other. Those species most likely to require special management, or which were decreasing steadily in the region, preferred grasslands, savannas, and nature reserves.

Kim and his colleagues in the field encountered some 120 species of birds in the two-year study. Of 63 bird species common enough for detailed analysis, one-fifth appeared intolerant of development (e.g., Vesper Sparrow, Eastern Towhee, Least Flycatcher), two-fifths tolerated agriculture but not suburbanization (e.g., Eastern Bluebird, Indigo Bunting, Yellow-throated Vireo), and 29 percent benefited from suburbanization (e.g., House Sparrow, House Wren, Gray Catbird). Even though forest songbirds have been considered quite sensitive to habitat fragmentation, the grassland and savanna birds of the region are more vulnerable because grassland-savanna habitat loss is greater than forest loss in the region, and grasslands and savannas are more intensively used.

Kim presented several recommendations for conservation. Reserves may best serve as refuges for regionally declining grassland and savanna birds, while suburbs could support large populations of development-tolerant native birds if development were concentrated and modified, leaving more vegetation and larger expanses of wild land and forests. Rural lands represent an unrecognized conservation opportunity threatened by dispersed residential and suburban-style development. Conservation measures taken in rural lands would increase the likelihood that most members of the region's biota would persist well into the future.

Showy locoweed in Minnesota

by Michael Heinz

Oxytropis splendens (showy locoweed) thrives on the northern plains, but in Minnesota this handsome species of locoweed has been collected only once. On June 25,1853, while members of a railroad expedition camped on the Chippewa River in Pope County, in the west-central part of the state, one of the scientists added the species to the expedition's extensive plant collection.

Members of the surveying party, under the command of Lt. E. G. Beckwith, had left Pike Lake and stopped at the Chippewa before heading to a camp on the Bois de Sioux River, which flows out of Lake Traverse along the South Dakota border. In a report published by the U.S. War Department, John Torrey and Asa Gray listed the specimen as *Oxytropis splendens* Dougl.

They wrote: "A most elegant plant, with its crowded silvery-villous foliage and spikes, and deep blue corollas. It was gathered on the Chippewa River." This note refers to the specimen in the collection at Gray Herbarium. Showy locoweed

Continued on page 7

Minnesota fungi are on centralized database

by David J. McLaughlin, Professor, Department of Plant Biology, and Curator of Fungi, Bell Museum of Natural History, University of Minnesota, St. Paul

The fungi of Minnesota are poorly documented. To aid in their study, a centralized database for mushrooms, plant pathogens, and other fungi has been produced as a result of consolidation of the two University of Minnesota fungal collections, with support from the Legislative Commission for Minnesota Resources. Access to the database is available at www.fungi.umn.edu.

This database provides information on the distribution, ecology, and history of the fungi of the state. It includes a non-technical general introduction to the fungi, illustrations of mushrooms and plant pathogens, a history of the collection and the state of knowledge of the fungi of Minnesota, and a taxonomic outline for the specialist. The database is searchable in multiple ways, including by plant host and habitat, and it can produce reports that can be sorted by up to three fields. The database contains about two-thirds of the herbarium records. Record entry is continuing.

An example of the way the database can be used is in analyzing the results of last summer's North American Mycological Association Foray held at St. John's University, Collegeville, July 5-8. Half-day collecting trips were made to various sites, including three Scientific and Natural Areas, Quarry Park, Partch Woods, and Clear Lake. Specimens were brought to a laboratory on the St. John's University Campus for processing and identification by scientists. Through the efforts of staff of the Field Museum of Natural History, Chicago, especially Dr. Patrick Leacock, the data have been compiled and specimens processed. Vouchers specimens will be deposited in the University herbarium.

The specimens collected during this foray not only provide an important initial survey of the fleshy fungi for these Scientific and Natural Areas, but also are among the first mushroom records for Stearns County. Our previously documented collections showed 19 Stearns County records, but almost all of these are microscopic plant pathogens. Continued surveys are needed to obtain a complete picture of the fungal diversity, i.e., to observe species that appear in early spring, late summer, and fall.

Of the 217 species collected during this foray, approximately 45 are new state records. Members of the Minnesota Native Plant Society can make an important contribution to the study of Minnesota fungi by assisting in future collecting, documenting, or processing of specimens.

Showy locoweed

Continued from page 6

grows about a foot tall from a taproot and woody root crown. The collector probably was James Snyder, who is credited by Torrey and Gray with collecting and submitting many of the expedition's plants, including all of those from Minnesota.

The expedition was following the Red River Cart Trail used to transport goods from Selkirk's settlement at Pembina, on the Canadian border, to St. Paul. Quite possibly, the seeds of *Oxytropis splendens* were transported from the settlement, an area within or near the species' range, to the hills of the Chippewa in Minnesota. The chief range of the species is from the northern counties of North Dakota into the prairie provinces of Canada. It reappears on the foothills of the Rockies.

Plant Lore

by Thor Kommedahl

What is blue cohosh?

Blue cohosh is *Caulophyllum thalictroides* in the barberry family. It is a perennial that grows in moist woods throughout most of Minnesota except in the northeast. Another common name is blue ginseng.

How did it get its names?

The name cohosh comes from an Algonquian word that means rough because of the knotty, rough rhizomes; its stems and pea-sized seeds are bluish. *Caulophyllum* is derived from the Greek words stem and leaf and alludes to the emergence in spring of a naked stem that ends in a compound leaf without a petiole. The stem seems to form a stalk for the three-parted leaf.

What about *thalictroides*?

Its leaves resemble meadow rue, in the buttercup family, whose genus is *Thalictrum.*

What about its growth?

It is striking in spring as the unfolding leaf is prominent over the still barren forest floor. Later, the attractive, large, cluster of blue seeds captures one's attention. The ovary wall splits to expose two blue drupe-like seeds. It is somewhat shrub-like and can be two to three feet tall. It blooms from April to May.

Has it medicinal properties?

Yes, American Indians used infusions from the roots for treating rheumatism and in aiding childbirth. The Chippewa Indians used a strong root decoction as a contraceptive. Research since then has shown its value in treating menopausal symptoms, and the root is officinal in the "U.S. Pharmacopeia."

Is any part of the plant edible?

Plant parts, including seeds, can be poisonous. The plant is also an irritant to the skin. Its seeds have been roasted to make a beverage.

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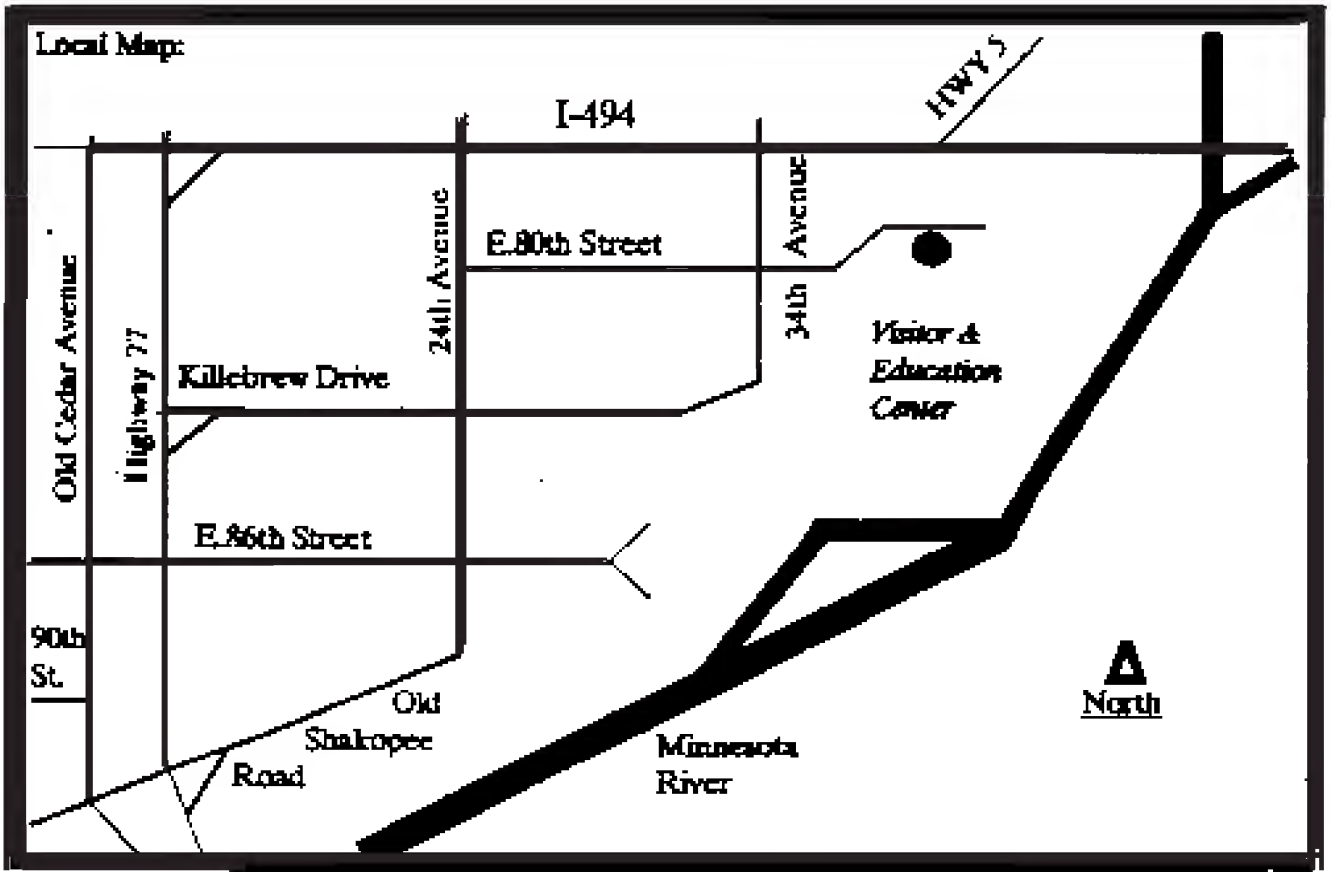

Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 21 Number 4 **Summer 2002**

Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th St.
Bloomington, MN 55425-1600
952-854-5900

6:30 p.m. — Building east door opens
6:30 p.m. — Refreshments, information, Room A
7 – 9 p.m. —Program, society business
7:30 p.m. — Building door is locked
9:30 p.m. — Building closes

Programs

The MNPS meets the first Thursday in October, November, December, February, March, April, May and June. Check the Web page for additional program information.

Oct. 3: "Buckthorn Busting," by Janet Larson, MNPS board member and landscape designer in Natives Division of Supreme Companies; **Plant of the Month**: to be announced.

Nov. 7: To be announced.

Dec. 5: To be announced.

Plant sale thanks

Thank you, volunteers and plant donors. Your efforts made the June 2002 plant sale a success. There were many species, and plants were in excellent condition. We hope they are flourishing in your gardens.

Proceeds totaled $454.75, compared with $360.50 in 2001 and $424 in 2000. The highest total was $593.35 in 1999. The plant sale is the Minnesota Native Plant Society's primary money-making project.

MNPS Web site

http://www.stolaf.edu/depts/biology/mnps
e-mail: MNPS@HotPOP.com

Botanical illustration melds science, art

by Vera Ming Wong
(Abstract of Dec. 6, 2001 talk)

My mission, and that of my solo company, Arakunem Arts, is to educate and inspire people to help protect and restore nature in our environment. I work towards this mission as a natural science illustrator by creating visual artworks (and writings) that convey significant information about natural subjects accurately, with some aesthetic grace, for nature conservation projects, organizations and agencies. Through my experiences splicing science and art, I've developed strong personal biases. These may differ from those of other artists and illustrators of plants, who have their own perspectives, priorities and opinions.

Labeling

"To illustrate" means to illuminate, clarify or elucidate, usually through visual images, or to demonstrate or provide an example, either in actuality or through visual images.

A "botanical illustration," therefore, is simply a visual image that conveys observations, concepts and information about plants or their processes, usually in collaboration with written text, preferably with some aesthetic grace. A picture may indeed be worth a thousand words, if it can show, quickly and concisely, images that would be difficult to describe. Aesthetically engaging illustrations can also attract attention, enhance the visual appeal, or help visually oriented people learn faster.

Botanical illustration is often equated with infinitesimal detail, but the level of detail rendered should be appropriate to the purpose, message and presentation format of the illustration.

Botanical illustration for research requires accuracy in depicting plants, to avoid misleading or misinforming viewers. Accuracy involves showing the right number of parts, in the right places, at whatever level of detail is used. But "accuracy" is different from "precision" or "degree of detail." Drawing tiny hairs on a leaf may add detail, but if the leaf is hairless, or if the hairs are the wrong shape, those details are inaccurate and misleading. If the leaf edge is the critical characteristic to show, hair details may be distracting.

Continued on page 4

Sharing and Connecting

by Joel Dunnette, MNPS Acting President

Our goal is conservation of native plants. But we often act singly, independently of others. To reach our goal, I feel strongly that we need to share and connect. This connection is needed not only with native plants themselves, but also with other enthusiasts, and with the general public. Sharing can help us and those we share with — intellectually, emotionally, and politically. Sharing is the way that we make the connections that are necessary for accomplishing great things. We need to share experiences — each of us knows some things that nobody else knows! And we need to go beyond sharing with other enthusiasts, so that we connect with neighbors, teachers, students, and the general public.

People today have largely lost their connection with nature. This loss is especially noticeable at the local level; people say they care about nature but express that caring only toward far away, special places. We need to restore the personal connection with nature that people need to make good decisions about their local environment. How can we expect people to appreciate and use native plants if they have no concept of what "native plant" means?

Reach out to those around you and help them make the connection to nature that sustains each of us. There are many opportunities. These include participating in work projects, helping with school projects, writing notes for others to read, helping staff information booths, and just sharing your enthusiasm and knowledge of native plants with friends and neighbors. I lead field trips and give talks on native plants and the animals that rely on them. Articles are always welcome. Neighbors and friends ask about my "wild" plantings; some ask how they can have their own.

Keep the "big vision," but work locally. I am finding so much to do in the Rochester area, that I will be quite busy with local projects. Those of you in the Twin Cities area may not see or hear much from me in the coming years, but know that I will be busy enhancing the knowledge, appreciation and use of native plants. I hope you will too.

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

MNPS Board of Directors

'Extinct' rosinweed moth is rediscovered

by Mark J. Leoschke, botanist, Wildlife Bureau, Iowa Department of Natural Resources

I first heard this wonderful and inspiring tale at a prairie invertebrates meeting at Luther College last October. It is a story of serendipity, discovery (literally in someone's front yard prairie planting) and return from extinction. We still have a lot to learn about our own fauna.

There is an Iowa connection here too — at least one of the eight historic collections came from Iowa earlier this century. It is quite possible that this moth is lurking out there in Iowa, just waiting to be discovered!

The article that follows is from the Wisconsin Department of Natural Resources Web site. The Web address is www.dnr.state.wi.us/org/es/science/project/projects/ros_moth.htm.

[Note by Charles Umbanhower: This story really does speak of what we are attempting to do with protecting and restoring native plant communities. Rosinweed is not found in Minnesota, but the more general lesson still applies.]

In 1998, DNR Researcher Rich Henderson collected a few insect larvae that he noticed were causing heavy feeding damage on the prairie wildflower rosinweed (*Silphium integrifolium*). He reared these to adult stage, and they turned out to be a small moth. Rich passed the moths along to Les Ferge, an expert lepidopterist in Madison, Wis.

Two years and a couple more experts later, the moths were identified as *Tabenna silphiella*, in the moth family *Choreutidae*. Rich's collection and the identification process were no small achievements, as this particular species had previously been known by only eight other specimens, and no larval information had been gathered since the species was first described from specimens collected from rosinweed in northern Illinois in 1881!

Formal publication of these findings will be in the near future. Meanwhile, this article and photos have been placed on the Web to provide hobbyist and experts alike with information that will enable them to look for and identify the rosinweed moth on their own, either through feeding sign or by rearing out larvae to adults. This type of work from volunteers will add greatly to our knowledge of the distribution range and life history of this species.

Typical feeding damage on rosinweed is caused by the larvae of *Tabenna silphiella*. The earliest sets of leaves are most affected, during the months of May and June. The plant continues to grow through the attack, producing new leaves. After the larvae pupate, usually in mid June, the plant will continue to grow and produce new leaves not affected by the feeding.

Note the window-pane feeding pattern and the silken webbing that pulls the leaf edges together. Larvae live solely within this webbing as individuals or in small colonies.

Doug Mensing joins MNPS board

by Meredith Cornett

The MNPS Board met at Deb Strohmeyer's home on June 9 and officially welcomed Doug Mensing, one of our newest board members, into the fold.

Doug is a certified Professional Wetland Scientist and is a senior ecologist with Applied Ecological Services, Inc. He has worked in the ecological, conservation and restoration fields, since1991. "I'm excited to be on the board," he said. "I want to expand the outreach of the Native Plant Society."

Many, many thanks to Joel for his two-term presidency, to Deb for going the extra mile as secretary, to Harriet for her service as vice president, and to David Johnson for his extremely reliable and comforting guidance as treasurer.

Officers were to have been elected from among the board members at the meeting. However, a few members were not present, and we decided that all members should give it some serious thought over the summer so that we can make a quick decision at our September board meeting. New members are not expected to serve as officers during their first year.

The slate of officers at this time includes: president (open); vice president, Linda Huhn; secretary, Meredith Cornett; treasurer, David Johnson.

Monarch butterfly field trip is Aug. 18

Tag Monarch butterflies at Iron Horse Prairie Scientific and Natural Area on Aug. 18. This rich tallgrass prairie serves as a fueling stop for thousands of Monarch butterflies on their journey southward. Catching and tagging will start at about 1:30 p.m. Greg Munson of Quarry Hill Nature Center will lead the tagging, and Joel Dunnette will help inform folks about the prairie. For more information about the field trip, call Joel at home, 507-365-809.

Botanical illustrations

Continued from page 1

Botanical illustrations for research, public education, interpretive signs, advertising or other situations might be simple or complex; rough or elegant; detailed, bold or loosely rendered, as long as they accomplish their purpose: to illuminate, clarify or elucidate, or demonstrate plants, or concepts about plants.

Botanical art vs. botanical illustration

What distinguishes "botanical illustrations" from "botanical art"? The line between them is pretty fuzzy and perforated, defined mostly by intent, purpose and presentation of the work.

A non-illustrator artist may choose to portray a plant for personal reasons, express subjective thoughts or feelings about the plant, use the plant image as a metaphor for another issue, and employ any preferred style. Plants depicted in the artwork may not be the actual message of the artwork.

Botanical illustrators create collaborative artworks to convey particular ideas, usually in conjunction with text. Illustrations and text share mission and goals, but play complementary roles. Botanical illustrations focus on the plants themselves, or some aspect of the plants. As partner to science, they strive to present the plant objectively; and minimize the illustrator's opinions, feelings or metaphorical views. I like to think of it as trying to look from the plant's point of view.

Aesthetics and styles, in both "art" and "illustration," are subjective and ephemeral, therefore not a useful distinction between the two.

The seed

Creating a collaborative piece with text and illustrations usually involves many roles: experts in the field, authors, publishers, editors, illustrators, graphic designers, and funders. The originator, or seed (often author, editor or expert) generates the idea, then finds people to fill other roles. One person often wears many hats in the process. Occasionally, the illustrator originates a project.

Sprouting

The social, historical, academic and personal environments are the substrate in which the originator's opinions, ideas, goals and objectives sprout, develop a particular message, and find the audience to grow.

Branching

Botanical illustrations serve botany (or other plant-related fields) through art.

The different branches of plant-focused science have different objectives and goals. Illustrations must adjust accordingly. For example:

1. Plant Taxonomy: show diagnostic characteristics to distinguish between taxonomic groups.

2. Developmental Plant Biology: show growth stages, patterns, and responses of plants to genetic and environmental conditions.

3. Plant Ecology: emphasize habitat, environmental needs, associated species, predators, pollinators, symbionts, parasites, etc.

4. Horticulture, Silviculture: emphasize general appearance, form or use of plant; distinction between varieties; demonstrate how-to or pathology.

5. Agriculture: demonstrate planting, growing, harvesting, storing; or parts of plant used/ eaten.

6. Nutrition: show kinds of plants to choose, or preparation or cooking methods.

Budding

Combined with practical considerations of availability and costs, goals and objectives guide such choices as publication medium, format, scope and deadlines, for both text and images. Where and what kind of botanical illustrations would be most effective, and why? Answers to these questions help set many parameters for the illustrations, such as subject(s), size, color or B/W, and sometimes medium or technique. Usually the illustrator makes creative choices affecting the visual image, loosely called the "Art of Illustration," such as: composition, media, technique, and style, which affect the impact, attractiveness, attitude and clarity of the illustration.

Fertilizing

An illustrator who understands the subject, context, and audience of the illustrations can make more choices that "speak" more effectively to the viewer. A botanical illustrator's primary sources of visual information are usually specimens of the plant to be illustrated (alive or preserved), and secondarily, other visual documentation (photos, other drawings or diagrams). Consultations with experts in the field provide additional information, background and context. Expected users of the materials, or production experts, can provide additional advice and direction.

Integrity

Each of the collaborators may have different priorities for the illustration. The illustrator must consider and try to accommodate these different priorities while supporting the goals and objectives, and maintaining message and integrity of the artwork. This is also part of the Art of Illustration.

Flowering

In creating a botanical drawing, an artist/illustrator creates two-dimensional visual images that

represent plants. My drawings start out as rough approximations of general shapes that I see. Yours can too.

We start with the most basic, all-encompassing, simple shape that we can find. Through a process of adding, subtracting and modifying the basic shape with other smaller, relatively simple shapes, we embark on a journey of revisions and refinements. Paying attention to the accuracy of the shapes we're using, both positive and negative, helps us maintain appropriate proportions. Sensitive contour drawing takes care of complex edges and folds. Eventually, a line drawing of the plant grows at the tips of our pencils.

The lines and shapes themselves imply layers of objects in space, but to add to the optical illusion of three dimensions, we can add shading, or color. For dramatic, high-contrast effect, we can push all dark areas into black, and all lighter areas into white. Switching tools, if we cut away the light areas from a linoleum or wood block, we'll print the dark areas. Or, we can reverse our thinking, to draw light areas with white pencil on dark paper.

Whichever direction we choose, it all starts with a seed, an idea, a need to convey some specific information about this plant, or an idea related to this plant, to fulfill a purpose or work towards a mission. From this flower, perhaps another seed will grow.

Addenda

Illustrate with drawings or photographs?

People often ask why I bother drawing plants and other natural subjects. Wouldn't photography be quicker? Perhaps, but they do different jobs. Often, a perfect, or "average" specimen needs to be illustrated, but may not actually exist (where is the perfectly average human?). An illustrator can combine elements of several specimens to create the perfect average.

Under variable light conditions, an illustrator's eyes adjust more easily and over a wider range than a camera. Wind, extreme temperatures and biting insects can still be limiting factors. Distracting backgrounds are easily eliminated by simply not drawing them.

With very small subjects, the camera's depth of field is very limited. The illustrator's eyes re-focus constantly, to draw the entire specimen in focus. Even with advanced technology, there still seems to be a need for people who can draw plants well.

Sources: specimens or photographs?

Many people ask if I work from photographs, and if not, why not? Yes, I occasionally work from photographs, but I prefer to draw from live specimens, where I can see the gesture, growth form and habit of the plant, how it responds to its environment, and better understand the cause of individual variations.

Drawing from live specimens helps tremendously in getting the drawing to look three-dimensional and "alive," but also requires me to translate three dimensions into two. A photograph does that for me, but doesn't allow me to see the plant from different angles or to look closer. When I'm drawing from a photograph, I find myself looking behind the photo to try to see the other side of the plant.

When live specimens aren't available, I use herbarium specimens. Although the three-dimensionality of the plant is lost, the growth form is retained, and the diagnostic characteristics by which the plant is identified are mostly available. Combining photographs with herbarium specimens is the best substitute for a live specimen.

Which are art, which are illustrations?

How do you categorize highly detailed, delicate watercolors of beautiful flowers, or intensely detailed pen-and-ink drawings of various parts of a particular plant, crammed onto a page?

Botanical illustrations from other times and cultures may be presented in different styles and media:

- Old European wood engravings of stylistically flattened herbs;
- Chinese paintings, in "splashed ink" (calligraphic) or "working brush" (carefully rendered) styles, of garden plants;
- Ancient Egyptian murals of papyrus and wheat;
- Australian aboriginal paintings of important food plant tubers.

From my viewpoint as an illustrator, any of these could be either art or illustration.

Restore native plants to the North Shore

Collect seeds from grasses, shrubs, or trees to custom grow for restoration and regeneration projects in North Shore state parks, such as Gooseberry River, Split Rock Lighthouse, and Tettegouche.

Under the direction of the North Shore parks resource specialist or park manager, volunteers will be trained in how to collect and handle plants, seeds, or cones from specific plants in the park. Volunteers must be able to work outdoors in a variety of conditions, follow instructions, and work safely. A time commitment of one full day, or a couple of half days, during the week is preferred.

The need for volunteers varies each season. Collection generally occurs in late summer or early fall. Contact Harley Hanson, North Shore Parks Resource Specialist, Two Harbors, at 218-226-6376 or harley.hanson@dnr.state.mn.us.

Dakota County bond issue would save natural areas

Dakota County residents will vote Nov. 5 on a referendum that would protect high priority natural areas and farmland, rivers and drinking water in the county. If the measure passes, the county will issue $20 million in bonds to fund the program. Matching funds may increase the total to up to $40 million.

Participation will be voluntary, and protected land can remain private. The funds will be used to purchase perpetual conservation easements or to purchase natural areas. Half of the money is to be spent to protect natural areas, and half to protect farmland that adjoins natural areas or bodies of water. An implementation plan lists criteria and priorities. A citizens' advisory committee will review applications and recommend land to be protected. An annual audit will be conducted.

Hundreds of citizens and nine organizations were involved in four years of planning and research that culminated with the Farmland and Natural Areas Protection Plan. The county board adopted the plan Jan. 29, with a 5 to 2 vote. In April they voted unanimously to hold the $20 million referendum. It will be "County Question 1" on the ballot. The bond issue will cost the owner of an average $160,000 house about $18 annually for 10 years.

A citizens' committee, "Vote Yes for our Land and Water," is supporting the referendum. Co-chairs are Bev Topp, chair of the Eureka Twp. Board of Supervisors, and Rick Hansen, chair of the Dakota County Soil & Water Conservation District Board. Gerry Drewry, editor of the Minnesota Plant Press, is co-chair of the outreach committee.

For additional information, go to the Web site, www.voteyeson1.org.

McKnight Foundation to launch public service campaign on open space

by Meredith Cornett

In September, nearly two years of planning will culminate in a grassroots public service campaign aimed at protecting vital open space in the Twin Cities region. The 12-month campaign will kick off in mid-September with ads and a campaign Web site.

Planned by an alliance of Twin Cities nonprofits, government agencies, academic centers, and The McKnight Foundation, the campaign will encourage metro area residents to become involved in civic, municipal, and state decisions on how land is used.

The campaign Web site will contain a wealth of information about open space issues in the Twin Cities region, including examples of sites that are endangered. Visitors will also be able to nominate favorite open spaces that they feel need protection.

Other Web site features will include:

- A citizen tool kit;
- Information for landowners interested in alternatives to development; and
- Ways that citizens can get involved with protection efforts already underway by organizations such as Friends of the Mississippi RIver, Great River Greening, Minnesota Center for Environmental Advocacy, Minnesota Land Trust, 1000 Friends of Minnesota, Sierra Club, and Trust for Public Land.

This is an important time for action — many critical land use decisions lie ahead in 2003. Be sure to check out the new campaign Web site in mid-September. Then join in speaking out to protect open spaces. The next generation will thank you.

Visit The McKnight Foundation online at http://www.mcknight.org/, and keep an eye out for links to the campaign Web site in September.

MNPS Web site tells how to help protect native plants

by Meredith Cornett

MNPS members can find out how to get involved with native plant conservation by visiting the Conservation Committee Web site. Go to the society's Web site and click on "Conservation Committee," or type in this address: www.stolaf.edu/depts/biology/mnps/cc.html

Currently, information is available on how to take action on the following topics:

- Help shape the future of Minnesota's national forests (over 4.5 million acres of native plant habitat);
- Advocate equal protection for plants under the Federal Endangered Species Act through the Native Plant Conservation Campaign;
- Spread the word about impacts of non-native earthworm invasions on Minnesota's northern hardwood forests;
- Encourage the City of Duluth to conserve significant native plant communities at Spirit Mountain Recreation Area and on Park Point.

Ideas are shared at North American Prairie Conference

by Joel Dunnette

Every other year folks interested in prairies gather for the North American Prairie Conference. I have had the pleasure to attend a few, including this year's edition, which was held in Kirksville, Mo. As always, it was good to be able to share information and enthusiasm for our prairie heritage. There were four to six concurrent sessions, so I only sampled the diverse information and discussion. Here are some ideas of note:

- Many projects are on a much larger scale than 10 years ago. Projects of 1,000+ acres are now common.
- There is also more urban use of native plants.
- Several states have programs for local origin seed. Although differing, these states are working toward similar goals.
- There was good discussion about the mechanics, economics, and sociology of production of native plants. Missouri's "Grow Native" program is pushing native plants into the general horticultural marketplace.
- Monitoring of plants varies widely. There are some reasons for differences. But we need to do much more to be able to save, recall, share and compare data.
- Discoveries are still being made, especially about insects and interactions that plants have with insects, grazing animals, mychorhizae, haying or burning, as well as interactions between plants.
- We know relatively little about prairie insects, or indeed, native insects in general.
- There is often great specialization of knowledge, and a need to share not only knowledge but also efforts.
- Methods for control of reed canary grass are emerging. Timing and choice of herbicide are important, as is rapid re-vegetation with desirable species.
- There is some very interesting prairie in Missouri, often remaining due to the widespread practice of haying mixed vegetation fields.
- Missouri's dedicated funding for conservation is having a wonderful impact.
- There were not many folks from Minnesota. At each conference, there are many people from the host state; only after attending several prairie conferences do I get a good sense of the widespread interest in prairie across the region.
- Several presentations pointed out the importance of persistence in pursuing goals.

The next North American Prairie Conference is set for Madison, Wis., in 2004. I plan to attend — how about you?

Plant Lore

by Thor Kommedahl

What is Grass of Parnassus?

It is a low-growing, bog plant called *Parnassia palustris*, and it is a member of the saxifrage family. This flowering plant is native to central and northern Minnesota.

How did it get its name?

Dioscorides, a first century Greek physician and author of *Materia Medica*, named the plant "Agrostis en parnasso," the grass of Mount Parnassus — a place in Greece sacred to Apollo and the Muses. The name *Parnassia* was selected either to honor the name used by Dioscorides or else to recognize this as an alpine plant; it grows in northern latitudes around the world. "Palustris" means boggy or marshy, to show it to be a bog plant.

How can one recognize the plant?

It is a smooth perennial growing in calcareous fens, has a bare stem arising from basal, heart-shaped leaves, and has prominent veins in the five white petals. The "bare" stem does have a single, small leaf about a third of the way up the stem. The fruit is an egg-shaped, four-parted capsule.

Is the plant useful economically?

Not really. Some have transferred plants to their gardens. Dioscorides wrote that juice from the roots, when mixed with wine, honey, some myrrh, pepper, and frankincense, is an "excellent medicine for the eyes"— maybe in his day!

Environmental Web site has local information

ForMyWorld, an Environmental Defense and National Wildlife Federation Web site, has local information by Zip codes. The address is www.formyworld.com.

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